Phasergy

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EM-100

Multi-Circuit Energy Meter

Up to 12 three-phase circuits in one DIN-rail assembly

- Modular: 2 to 12 three-phase circuits
- Own voltage reference per module: up to 6 independent references
- Split-core CTs from 100 A to 3000 A
- RS485 Modbus RTU · Ethernet version
- Power quality: THD and harmonics up to the 31st, per phase

Modbus RTU **Ethernet** **DIN 35 mm** **Class 0.5**

Technical datasheet

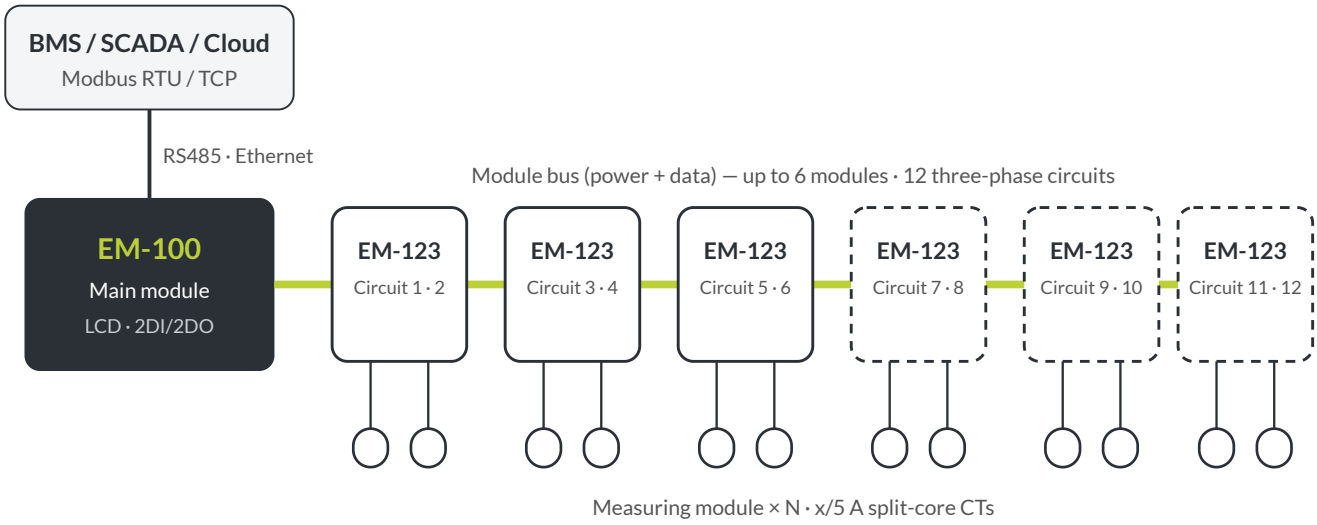
The Phasergy EM-100 measures up to twelve three-phase circuits from a single DIN-rail assembly: one main module and up to six EM-123 measuring modules, each with two three-phase CT inputs. It is designed for main switchboards where each feeder (HVAC, refrigeration, lighting, tenants) needs its own energy and power-quality data.





01 SYSTEM OVERVIEW

The main module provides the display, the communication ports and the power supply for the measuring modules, which are connected in cascade through the module bus (power and data in the same connector). Each EM-123 module measures two independent three-phase circuits through standard x/5 A current transformers, with a programmable CT ratio per circuit, and has its OWN voltage reference input: circuits fed from different panels, transformers or sources can each be measured with the voltage of their own source.



02 VERSIONS

Model	Role	Communication	Notes
EM-100 · RS485	Main module	2 × RS485 Modbus RTU	Supplies and polls the measuring modules; LCD, IR port, 2 DI / 2 DO
EM-100 · Ethernet	Main module	RS485 Modbus RTU + Ethernet (TCP/IP)*	Same as RS485 version, with RJ45 port for direct network integration
EM-123	Measuring module	Module bus to main	2 three-phase circuits via x/5 A CTs · 4 DI / 4 DO

* Ethernet version: confirm the TCP/IP protocol profile for the project.

Configurations

EM-123 modules	1	2	3	4	5	6
Three-phase circuits	2	4	6	8	10	12

03 TECHNICAL SPECIFICATIONS

Main module EM-100	
Rated voltage	3 × 220/380 V AC
Frequency	50 / 60 Hz
Auxiliary supply	From 3 × 220/380 V AC, or AC/DC 85–265 V
Display / interface	LCD with 4 keys · infrared port
Communication	2 × RS485 Modbus RTU · Ethernet version: + RJ45 (TCP/IP)
Digital I/O	2 DI (dry contact) / 2 DO
Expansion	Up to 6 EM-123 modules (12 three-phase circuits)
Energy history	12 months
Measuring module EM-123	
Circuits	2 three-phase (3P4W or 3P3W)
Voltage reference	Own input per module (Ua · Ub · Uc · N), independent from the other modules
Current input	3 × 1(6) A per circuit, from x/5 A CTs
CT ratio	Programmable per circuit (100 A to 3000 A primary)
Accuracy	Active energy class 0.5
Digital I/O	4 DI / 4 DO
Pulse output	2 channels (one per circuit)
Status LEDs	Run, pulse and communication
Environment and installation	
Operating temperature	-20 °C … +60 °C
Mounting	35 mm DIN rail · modules side by side (one or two rows)
Dimensions (each module)	72 × 115 × 79.5 mm

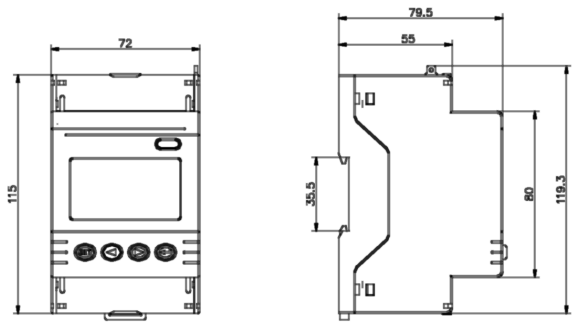
Measured parameters (per circuit)

- Active energy (import / export), per phase and total
- Reactive energy (import / export) and apparent energy
- Active, reactive and apparent power, per phase and total
- Phase-to-neutral and phase-to-phase voltage
- Current per phase
- Power factor, per phase and total · Frequency
- THD of voltage and current · Harmonics 2nd to 31st
- Voltage and current unbalance

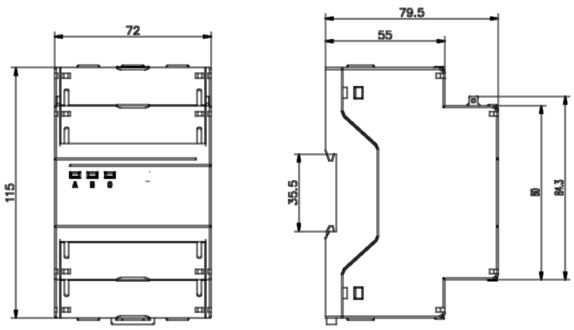
Power quality **Harmonics up to the 31st**

- THD of voltage and current, per phase
- Individual harmonics from the 2nd to the 31st, voltage and current, per phase
- Voltage and current unbalance

04 DIMENSIONS



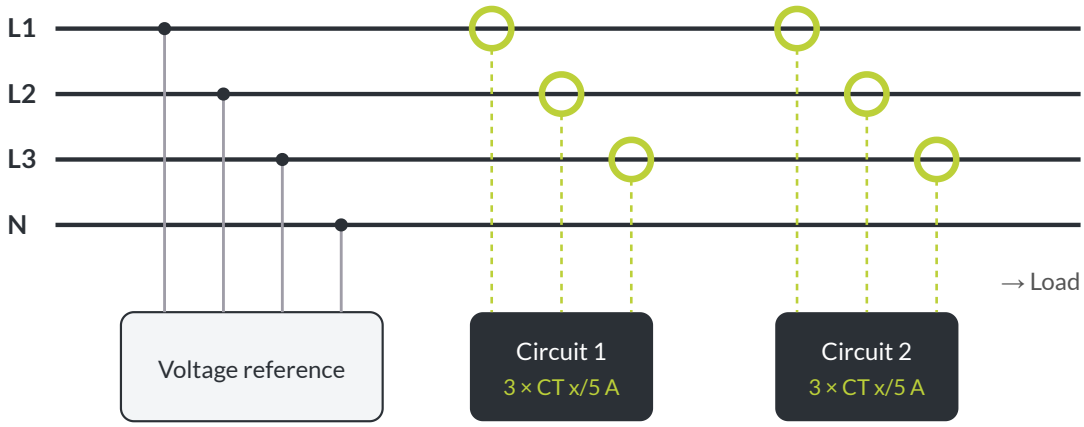
EM-100 · main module (mm)



EM-123 · measuring module (mm)

05 CONNECTION

Typical connection of one EM-123 module: the module's own voltage reference and two three-phase circuits, each through three x/5 A split-core CTs. Each module can take its voltage from a different panel or source.



Installation sequence

1. Mount the main module first, then the EM-123 CT modules on its right.
2. Connect the voltage reference of each module (check it matches the circuits it measures).
3. Install the split-core CTs and ground their secondaries.
4. Link the modules to each other and to the main module with the module bus.
5. Set the number of modules, the Modbus address / baud rate, the connection type (3P4W / 3P3W) and the CT ratio of each circuit.

06 DATA INTEGRATION

All measurements are available as Modbus registers (RTU over RS485, or over Ethernet in the Ethernet version), so the EM-100 integrates with building management systems, SCADA, data loggers and cloud monitoring platforms. Register map available on request.

07 SPLIT-CORE CURRENT TRANSFORMERS X/5 A

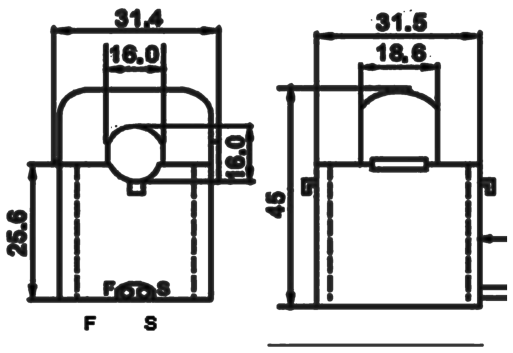
Split-core CTs open around the conductor, so they are installed without disconnecting the feeder.

Characteristic	Value
Rated voltage	0.66 kV
Insulation voltage	2 kV
Frequency	50 / 60 Hz
Secondary	5 A
Flame retardant	UL94-V0
Operating temperature	-30 … +70 °C (CT-16: -20 … +75 °C)

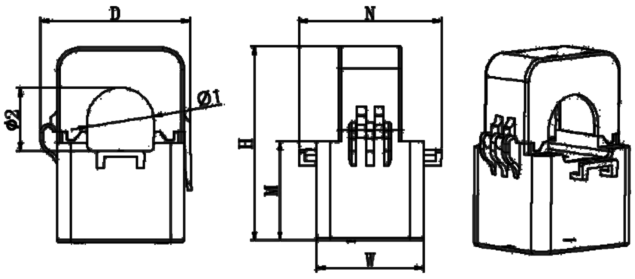
CT-16

Model	Ratio	Class
CT-16	100 A / 5 A · 200 A / 5 A	0.5

W	H	D	Window
31.4	45	31.5	Ø16



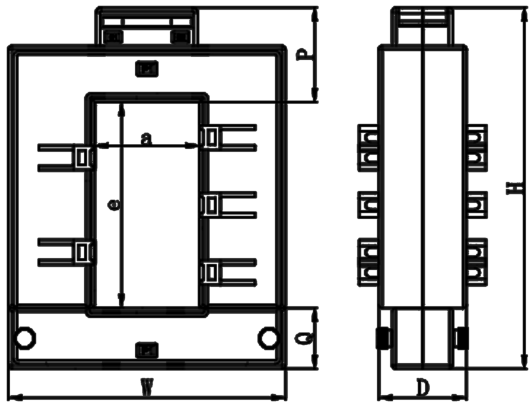
CT-16 · Dimensions in mm



CT-24 · CT-36 · CT-50 · Dimensions in mm

Model	Ratio	Class
CT-24	200 A / 5 A	1
CT-36	400 A / 5 A	0.5
CT-50	1000 A / 5 A	0.5

	W	H	D	M	N	Φ1	Φ2
CT-24	39	70.5	55	36	52	24.5	23
CT-36	42.5	81.5	67	40	56	33.5	35
CT-50	46.5	110	90	54	66.5	47	52



CT-80x50 · CT-120x60 · CT-120x80 · Dimensions in mm

Model	Ratio	Class
CT-80x50	1000 A / 5 A	0.5
CT-120x60	2000 A / 5 A	0.5
CT-120x80	3000 A / 5 A	0.5

	W	H	D	a	e	P	Q
CT-80x50	114	160	36	52	82	45	33
CT-120x60	144	214	52	62	122	56	36
CT-120x80	144	200	36	82	122	45	33